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A QUESTION IN SEMANTIC DEVELOPMENT--WHAT DOES A CHILD MEAN WHEN HE SAYS "NO".

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JAPANESE HAS FOUR COMMONLY OCCURRING NEGATIVE FORMS WHICH CAN BE ORGANIZED INTO THREE DIMENSIONS OR CONTRASTS. THE DIMENSIONS ARE TENTATIVELY LABELED--EXISTENCE-TRUTH, INTERNAL-EXTERNAL, AND ENTAILMENT-NON-ENTAILMENT. AN EXAMINATION OF THE SPEECH OF ONE JAPANESE CHILD INDICATES THAT THE ORDER IN WHICH THESE DIMENSIONS ARE ACQUIRED IS THE SAME AS THE ORDER LISTED. ONE IMPLICATION OF THIS SEQUENCE OF DEVELOPMENT IS THAT INITIALLY THE CHILD'S LANGUAGE WAS NOT SUFFICIENTLY EGOCENTRIC. THIS IMPLICATION IS SEEN AS FAVORING VYGOTSKY'S THEORIES RATHER THAN THOSE OF PIAGET. THIS REPORT WAS PUBLISHED IN "STUDIES IN LANGUAGE AND LANGUAGE BEHAVIOR, PROGRESS REPORT IV," 1967, BY THE CENTER FOR RESEARCH ON LANGUAGE AND LANGUAGE BEHAVIOR, UNIVERSITY OF MICHIGAN, 220 EAST HURON STREET, ANN ARBOR, MICHIGAN 48108. (AUTHOR/JD)

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A Question in Semantic Development: What Does a Child Mean When He Says "No"?

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Japanese has four commonly occurring negative forms which can be organized into three dimensions or contrasts. The dimensions are tentatively labeled: Existence-Truth, Internal-External, and Entailment-Non-Entailment. An examination of the speech of one Japanese child indicates that the order in which these dimensions are acquired is the same as the order listed. One implication of this sequence of development is that initially the child's language was not sufficiently egocentric; this implication favors Vygotsky in his dispute with Piaget.

The emergence of negation in English is a portrait of a child's resolution of complexity. Very roughly, English negation requires two transformations--one to remove an underlying negative element from where it is located in the deep structure of a sentence and the other to introduce an auxiliary verb (do or can) to carry this element in the surface structure (Klima, 1964). This sketch omits most significant matters, but it reveals an important part of what a child must acquire in order to negate in the English manner.

One hypothesis about language acquisition is that it rests on a set of specific cognitive capacities. These may be innate and may be described by the so-called theory of grammar, or linguistic theory (Chomsky, 1965; Katz, 1966; McNeill, in press). The suggestion is that the universal form of language reflects children's capacity for language--language has the form described by the theory of grammar because of innate capacities of children to acquire language. These capacities everywhere impose the same features on language, which, therefore, appear as linguistic universals.

An advantage of this view is that it accounts for linguistic abstractions, features in adult grammar that are never included in the overt forms of speech. Such features, of course, are not presented to children; yet, they exist as a part of adult linguistic knowledge. On the capacity hypothesis, such abstractions are thought to be linguistic universals deriving from children's capacity for language, and are made abstract through the acquisition of transformations.

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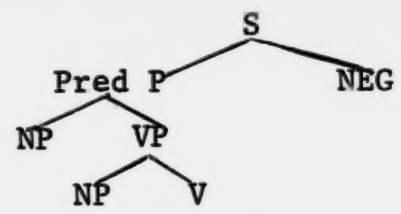
An example of a linguistic abstraction never presented as an overt form of speech is the location of NEG at the beginning of the deep structure of English sentences. On the capacity hypothesis, this abstraction is possible because the location of NEG on the boundary of a sentence reflects an aspect of children's capacity for language. The principle would be, roughly, that every proposition can be denied by attaching to it a minus sign.

In this light, it is interesting that Bellugi(1964) finds that the earliest negative sentences from children are NEG + S and S + NEG--i.e., sentences in which a negative element (usually no or not) is placed outside an otherwise affirmative sentence. Examples are no drop mitten, and wear mitten no. This form of negation persists until a child shows independent evidence of having the two transformations mentioned above, at which time it completely disappears--having now presumably become abstract (McNeill, 1966).

The Syntax of Negation in Japanese

We mention these findings with children exposed to English in order to compare them to the development of negation in Japanese. Syntactically, negation in Japanese is simple. Except for order, the relevant part of the deep structure is identical to the deep structure of English sentences:



In Japanese, however, there are no transformations involved in carrying the negative aspect of this structure to the surface. The surface structure of a negative Japanese sentence is also NP NP V NEG. On the capacity hypothesis, the development of negation in Japanese should therefore be likewise simple. Although the deep structures of Japanese and English sentences are alike (as they must be if sentence-external NEG is universal), Japanese, unlike English, interposes no transformations between deep and surface structure. Indeed on the capacity hypothesis, Japanese children should not be able to make syntactic errors.

We thus take it to be consistent with the English findings and the capacity hypothesis that neither of the two children we have been following has ever uttered a grammatically deviant negative. Their negative sentences are identical to some of the negatives that Bellugi described--viz, S + NEG, and this is entirely correct in Japanese.

Syntactically, the development of negation thus poses no problem in Japanese. The language does not require more from children than is already available in their general capacity for negation. In Japanese, the problem is of a different sort.

The Semantics of Negation in Japanese

Negation in Japanese, although syntactically simple, is semantically complex. It is here that the language provides distinct forms. And, because of the richness of forms, it is here that one can gain some insight into the process of development.

There are four common forms of negation--nai (aux), nai (adj), iya, and iiya. Nai (aux) is the form introduced into the P-parker given above. It is attached both to verbs, as indicated, and to adjectives. Nai (adj), like all adjectives in Japanese, has verbal force, so that one can say, for example, peace-nai, meaning there is no peace. Iya stands alone, and means, roughly, I do not want. Iiya also stands alone and means that what was just said is wrong and something else is right. There are other forms than these four, but they are restricted to special situations--formal speech, for example.

These four forms--nai (aux), nai (adj), iya, and iiya--embody three dimensions of meaning. Nai (as an adjective) is used in such sentences, as "there's not an apple here," said after someone has asked about a place where there is no apple. The use of nai (adj), therefore, depends on the non-existence of objects and events.

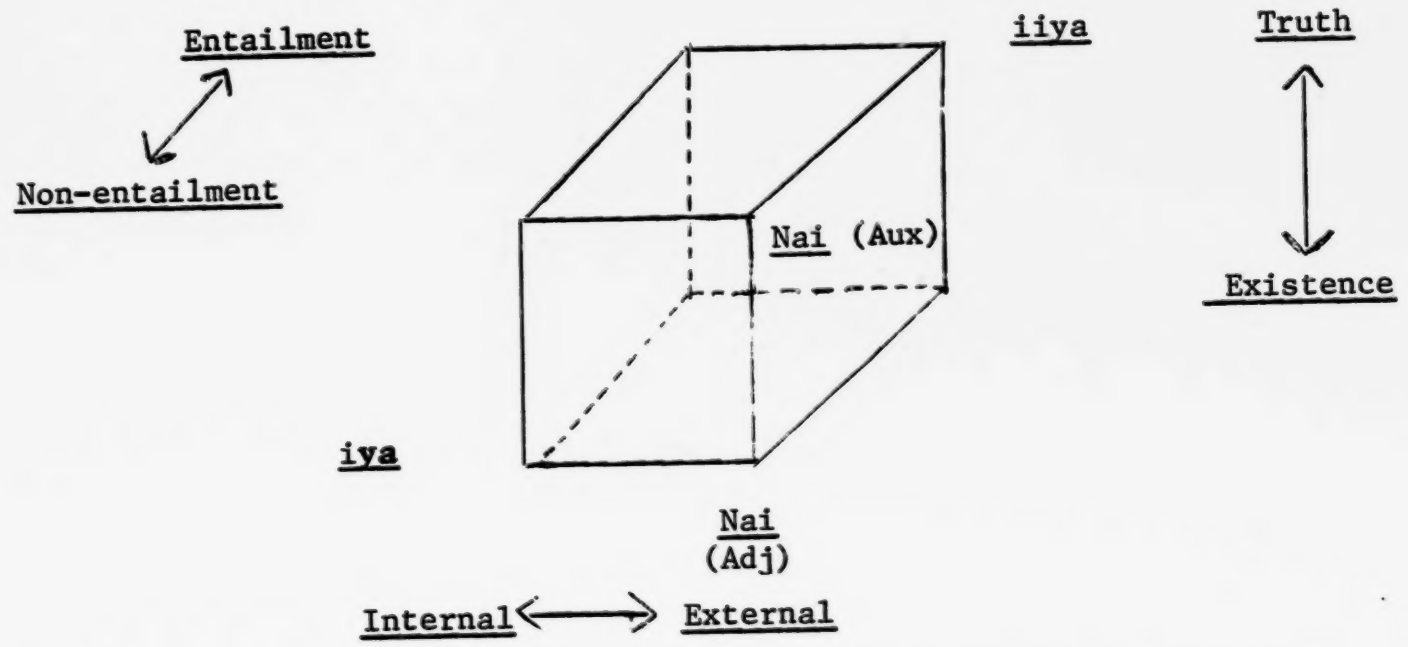
Nai (as an auxiliary) is used in such a sentence as "that's not an apple," said after someone else, pointing to a pear, said, "that's an apple." The use of nai (aux), therefore, depends on the falsity of statements.

Iya is used in such sentences as "no, I don't want an apple." Iya by itself conveys the idea of "I don't want," and its use, therefore, depends on internal desire, or the lack of it.

Iiya is used in such sentences as "no, I didn't have an apple, I had a pear." Contrastive stress can convey this idea in English: "No, I didn't have an apple, I had a pear." The import of iiya is that one alternative (already mentioned or somehow in mind) is false and another is true. We will call this type of negation entailment, since, in this case, the negation of one statement entails the truth of another.

The four kinds of negative in Japanese thus involve three dimensions, or contrasts: Entailment-Non-Entailment, External-Internal, and Existence-Truth (the last to be understood as indicating the condition of negation--the existence, or lack of it, of some thing, versus the truth, or lack of it, of some sentence).

One can organize these dimensions into a cube and locate the four negative terms in Japanese at the appropriate corners.



Alternatively, one can define the terms of negation in Japanese by means of feature matrices:

	Nai (adj)	Nai (aux)	Iya	Iiya
Existence	+	-	+	-
Entailment	-	-	-	+
External	+	+	-	+

According to these matrices, iya and iiya are diametrically opposite kinds of negation, and the two kinds of nai are identical, except that one depends on the non-existence of objects and the other on the falsity of sentences. Both these implications accord with native intuition.

The matrices also help explain what always strikes English speakers as a bit of oriental exotica when they first learn how Japanese affirm or deny negative questions. If someone asks, in English, "Is there no pear?" and you wish to give an affirmative answer, the correct response is "no, there is no pear." In Japanese, however it is the reverse. If one wishes to affirm, the reply should be, "Yes, there is no pear". A similar reversal exists for denial. In English it is "yes, there is a pear," but in Japanese it is "no, there is a pear." The difference is that "yes" and "no" in Japanese are (-Existence), whereas "yes" and "no" in English are (+Existence). Thus, the Japanese "yes" refers to the truth-value of the sentence, whereas the English "yes" refers to the existence of the pear. Similarly for "no" in the two languages: in Japanese it signifies a false statement, whereas in English it signifies non-existence.

The cube indicates that there are four other negatives possible but not used in Japanese. One, for example, would be a negative that denies the truth of statements on the grounds of internal desire, but which does not entail a true alternative. It would be a negative for existentialists: What you don't desire is false, but nothing in particular is thereby true. This is despair.

These three dimensions can be found in English negation also, but the language is ambiguous with respect to them. The English "no" is (+Existence) when discussing the physical environment, but it is (-Existence) in other contexts: for example, "three plus two is six", "no". And when one says, "No, anything but that!", presumably the left side of the cube is being evoked. But English does not have separate terms sorted out in the analytic Japanese manner. When a child says, for example, no dirty in English, he is at least four-ways, and possibly eight-ways, ambiguous.

Japanese, since it distinguishes among words along the three dimensions of negation, makes it possible to trace the order in which the dimensions emerge. We have looked for patterns of confusion--which negatives replace others--and from these patterns have tried to infer the sequence of development. In effect, we have asked, how is the cube built up? Or, equivalently, in what order are the rows of the feature matrix added?

The Development of Negation in Japanese

We have worked with tape-recordings of the speech of two Japanese children. Both children are girls and both live in Tokyo. To date, there is some seven months' accumulation of speech. One of these children presents very little data, and what she does present so far eludes our understanding. The other child, whom we call Izanami, will be described here.

At 27 months, the youngest age at which we have recordings, only two of the four negative forms occur. These are nai (adj) and iya. Iya is always used alone. Nai (adj) is used alone and after nouns, and both are correct contexts in Japanese.

Of the two forms present at 27 months, nai (adj) is always used when called for, as far as this can be judged. That is, whenever non-existence is talked about, Izanami uses nai (adj). Iya, however, is often replaced by nai (adj). For instance, if the mother said, "Let's give you some," Izanami would sometimes reply, "There's no giving," instead of "I don't want some." Nai (adj) intruded thus into as many as 40 per cent of the contexts appropriate for iya.

This pattern of confusion would arise if Izanami did not yet know any of the dimensions involved in negation, but reacted instead only to non-existence. Then nai (adj) would be used whenever called for, and iya (being in her vocabulary) would oscillate with nai (adj) in contexts calling for an expression of personal desire. Let us assume then that Izanami began with the registration of simple non-existence as the occasion for negation. In effect, she began with the nai (adj) termini of each of the three dimensions, but did not yet have the dimensions themselves. She built from Existence, Non-Entailment, and External. We have called this Stage 1.

About two months later, two things happened to iya. First, it began to appear in contexts calling for nai (aux). For example, if Izanami's mother said (falsely), "This is an apple," pointing to a pear, Izanami would reply with iya, apparently meaning "I don't want it." The second development with iya at this stage is that it began to appear in contexts calling for iiya.

The last intrusion, iya in place of iiya, is inexplicable on the feature analysis. These terms share no features--they are at opposite corners of the cube--and so should never be confused, so long as at least one dimension has been acquired. Moreover, iya has been present in Izanami's vocabulary since the beginning, but it appears in contexts calling for iiya only after two months, so we are fairly certain that the intrusion is the result of a new development.

Let us suppose that it is not iya but really iiya that appears in these contexts calling for iiya. Vowel-vowel sequences are common in Japanese, but Izanami has none at this time. Since iya and iiya can be distinguished only through a difference in vowel length, it is at least possible that Izanami intends iiya, even though she says iya. In support of this interpretation is one further fact. From the beginning, nai (adj) has appeared in contexts calling for iiya, but this intrusion ends at this same time, again, indicating that Izanami has acquired iiya. If we accept the interpretation that Izanami says iya when she intends iiya, we can say that Izanami has added either the Existence-Truth or the Entailment-Non-Entailment dimensions, or both.

Of the two dimensions, the evidence favors Existence-Truth. Recall that contexts calling for nai (aux) begin taking iya about this time. Instead of saying, "It's not an apple," Izanami begins saying, "I don't want an apple." However, if it is really iiya appearing in place of nai (aux)--so that she is saying, "It's not an apple but something else"--we then know that Izanami has acquired the Existence-Truth contrast only. It could not have been Entailment-Non-Entailment because iiya and nai (aux) are distinct on this feature--one being Entailment, the other being Non-Entailment. Hence, they could not be confused. However, they are alike on Existence-Truth, both being coded for Truth, and so could be confused if Izanami had this dimension alone.

Thus, the first dimension to emerge is Existence-Truth, and its appearance marks Stage 2 at which time Izanami's knowledge of negation is as follows:

	Nai (adj)	Nai (aux)	iya	iiya
1. No contrasts				
2. Existence	+	-	+	-

Stage 3 took place two months later. The replacement of iya by nai (adj), which had been present from the beginning, stops altogether. Izanami no longer says, "There isn't an apple," when she should say, "I don't want an apple." This development must signify acquisition of the External-Internal dimension, as well as the certain appearance of iya (as opposed to the truncated iiya). No other possibility exists, since External-Internal is the only dimension iya and nai (adj) contrast on. There is no problem of distinguishing iya and iiya here, of course, since the observation involves the pronunciation (or lack of it) of nai.

Thus, Izanami has two dimensions by Stage 3:

	nai (adj)	nai (aux)	iya	iiya
1. No contrasts				
2. Existence	+	-	+	-
3. External	+	+	-	+

At this point, our transcriptions stop, but the rest is predictable. Izanami will acquire Entailment-Non-Entailment in good time, and in so doing will distinguish nai (aux) from iiya and so eliminate the remaining confusion.

Summary of Developmental Findings

We can summarize our findings, and answer the question with which we began, by setting down the following four points:

1. At first, Izanami had no features of negation at all. At this stage "no" meant that something did not exist, and nothing more. Subsequent development consisted of forming contrasts with the ends of the dimensions represented in nai (adj); that is, with Existence, External, and Non-Entailment.

2. The first such contrast to emerge was between Existence and Truth. In addition to marking the existence and non-existence of events and objects, Izanami came to mark the correctness and incorrectness of statements. By Stage 2, "no" had come to mean false, as well as not here, creating an order of development that appears to be quite natural. Izanami judged relations about language only after she had judged equivalent relations within the external world.

3. The next contrast to emerge was between External and Internal. Besides registering the non-existence of events, Izanami began to mark her desires concerning events, so that, by Stage 3, "no" meant disapproval or rejection, as well as false and not here. Another direction of development, therefore, was from outside to inside, and this, too, seems like a natural order. Note that Izanami had an idea of registering the truth of statements before she had an idea of registering her inner states in relation to outer ones.

4. The last contrast to emerge must be Entailment-Non-Entailment. With this dimension, "no" will also come to mean "no but," which requires an ability to organize statements into mutually exclusive pairs. Because Entailment-Non-Entailment requires a child to hold in mind two propositions

at once, it would naturally follow either of the other two contrasts, both of which involve judgments about single propositions.

It is possible that these same four steps, insofar as they follow a natural order, are also taken by English-speaking children. As we pointed out above, the three dimensions of Japanese negation are used in English as well.

Development of Negation and Egocentricity

Aside from the light Izanami's development sheds on the emergence of a semantic system, her progress raises a question about an idea Piaget suggested many years ago--namely, the notion that young children characteristically think egocentrically.

On the basis of many observations Piaget (1926) concluded that young children reckon the world from their own point of view. They assume that what they <u>think</u> determines what actually <u>happens</u>. Their thought is, therefore, egocentric, not adapted to the demands of the environment, and their speech is accordingly often incomprehensible. Izanami, while showing the symptoms of egocentric speech, makes it doubtful that egocentric thought could have existed.

At Stage 2, Izanami said things like "pears don't exist," after being offered a pear that she did not want, or "there's no giving" when told "let's give your sister some." Both of Izanami's sentences could be taken as examples of egocentric thought. She talks about reality but means personal desire. The existence of things for Izanami is apparently determined by her inner states. But note that both examples are automatic results of the fact that Izanami has only the Existence-Truth dimension in Stage 2. It is not the case that she confuses her dislike of pears with their non-existence; it is <u>iya</u> (don't want) that is replaced by other forms, and never the other way around. Izanami's difficulty apparently is not egocentrism. Instead, it is that she does not take into linguistic account her dislikes <u>at all</u>, and so finds it entirely meaningful to use a form understood to deny existence in order to express distaste. Inasmuch as it is a form appropriate to the external world that intrudes on personal desire in these exchanges, one would say that the fault lies, not in thought too egocentric, but in thought not egocentric enough. In this respect, we believe Izanami comes down on the side of Vygotsky (1962), and not on the side of Piaget.

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